



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,727	02/15/2002	David F. Gavin	101792-200	2648
27267	7590	08/02/2004	EXAMINER	
WIGGIN AND DANA LLP ATTENTION: PATENT DOCKETING ONE CENTURY TOWER, P.O. BOX 1832 NEW HAVEN, CT 06508-1832			CELSA, BENNETT M	
			ART UNIT	PAPER NUMBER
			1639	

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/077,727

Applicant(s)

GAVIN ET AL.

Examiner

Bennett Celsa

Art Unit

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-37 and 39 is/are pending in the application.
- 4a) Of the above claim(s) 3,5,12-34 and 39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,4,6-11 and 35-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1639

DETAILED ACTION

Status of the Claims

Claims 2-37 and 39 are currently pending.

Claims 3, 5, 12-34 and 39 are withdrawn from further consideration as being drawn to a nonelected invention.

Claims 2, 4, 6-11 and 35-37 are under consideration.

Election/Restriction

1. Applicant's election with traverse of Group I (claims 2-11 and 35-37 drawn to biocidal composition comprising particles of metal core and pyrrithione adduct shell) in the correspondence dated 5/26/04 is acknowledged. The traversal is on the ground(s) that the additional examination of Groups II-IV is not burdensome. This is not found persuasive for all the reasons provided in the restriction requirement *inter alia* inventions I-IV:
 - a. have acquired a separate status in the art as shown by their different classification
 - b. require different and separately burdensome manual and computer searches (e.g. bibliographic/classification);
 - c. due to their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Accordingly, claims 12-34 and 39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention.

2. Applicant's further election of copper oxide (as the metal species) and sodium pyrrithione (as the pyrrithione compound) in the correspondence dated 5/26/04 is acknowledged. Criteria for instituting the election of species requirement (e.g. on pages 2-3 of the

Art Unit: 1639

Restriction/election requirement) were provided e.g. composition comprising different metals and pyrrithione adduct compounds which respectively differ structurally, physicochemically, functionally and/or by means of manufacture as to constitute independent and/or patentably distinct species requiring burdensome searches. Because applicant did not distinctly and specifically point out the supposed errors in the species election requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

3. It is noted that, with respect to the election of species, applicant failed to indicate claims readable thereon. In this respect the election of copper oxide as the metal species is not encompassed by claims 3 and 5.

4. Accordingly, claims 3, 5, 12-34 and 39 are withdrawn from further consideration as being drawn to a nonelected invention. Claims 2, 4, 6-11 and 35-37 are under consideration. The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

5. Claim 4 is objected to because of the following informalities: "rations" should be -
- ratios-- . Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 4, 7-9 and 35-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 1639

- A. In claims 7-9, "said copper pyrrhione adduct" lacks antecedent basis.
- B. In claims 35 and 37, "the coating material" lacks antecedent basis.
- C. In claim 36, "the coating diameter" lacks antecedent basis.
- D. In claim 36, "the idealized spherical particle" lacks antecedent basis.
- E. The terms "idealized spheres" and "idealized spherical particle" in claims 36-37 are relative terms which renders the claim indefinite. The term "idealized spheres (or spherical)" is not defined by the claim and the specification does not provide a standard for ascertaining the requisite degree or parameters (e.g. structure, shape and/or function) which constitute an "ideal" sphere", and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.
- F. In claim 4, the presence of a narrow limitation (e.g. about 60%-about 90% copper containing powder or compound and therefor about 10%-40% copper pyrrhione) and a broader limitation of 1:20 to 20:1 copper pyrrhione:copper core is indefinite. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions

Art Unit: 1639

of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

9. Claims 2, 4 and 6-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hosseini et al. US Pat. No. 5,540,860 (7/96) alone or if necessary further in view of the specification {e.g. page 7, figures (e.g. fig. 2) and examples (e.g. example 1) } to demonstrate inherency (e.g. see *Ex parte Novitski*, 26 USPQ2d 1389 (B.P.A.I, 1993); MPEP 2131.01(d) .

The present invention is directed to:

A biocidal composition comprising composite particles (shell/core) wherein:

a. The core comprises:

Art Unit: 1639

-surface oxidized copper powder or

-a copper compound (cuprous oxide, copper hydroxide or a copper containing salt(s))

AND

b. The shell comprises "copper pyrrhione" formed by reacting:

pyrrhione acid or water soluble salt of pyrrhione AND portion of copper or copper compound of core.

It is noteworthy that the present claim recites the metal pyrrhione shell by its means of manufacture e.g. in product-by-process format (e.g. *metal pyrrhione is formed by reacting a pyrrhione acid/salt with the core metal/metal compound*).

Hosseini teaches a "biocidal composition" (e.g. see col. 1, especially lines 45-50) comprising "particles" (e.g. spheres) of "copper pyrrhione" formed by aqueous mixing:

a. "a copper compound" (e.g. a "copper salt" such as copper chloride or copper sulfate) and

b "a pyrrhione salt"

(see col. 2, example 1).

The Hossein et al. method teaches the use of pyrrhione salts between about 1 to about 40% (based on total composition weight), between 5 and 25% and 15 and 25% (e.g. see Hossein at col. 2, especially lines 54-60)which anticipates, or alternatively renders obvious the percentage amounts of copper pyrrhione adduct shell of present claims 7-9, respectively since the reference amounts are within the scope of the claimed amounts. The Hossein teaching of "between about one and about 40% of the pyrrhione salt" would anticipate or render obvious the corresponding copper/copper

Art Unit: 1639

compound amount of "about 99% to about 60%" as presently claimed in claim 4; and additionally, the proportions of the Hossein components (e.g. see bottom of col.2) are within the scope of the wide ratio proportion (1:20 to 20:1) of core/shell ingredients. Hosseini teach the optional surfactant coating of its particles (e.g. see col. 2, lines 10-17) anticipating present claim 10.

To the extent that the Hossein reference biocidal copper pyrithione (e.g. sherical) particles differ by failing to explicitly teach the physical nature of the resulting particle e.g. a copper pyrithione "shell" and copper/copper compound "core" such a physical arrangement MUST be inherently present in the Hossein particles since:

- a. The Hossein particles are composed of the same ingredients and in the same amounts as the presently claimed particles;
- b. The Hossein particles are formulated in the same manner (compare patent example 1 and specification example 1) are shaped and sized (e.g. spherical and about 2-15 micron diameter) as particles disclosed in the present specification(e.g. see columns 2 and 7 of the reference and compare to specification page 7 and specification figure 2) ; and
- c. In light of the specification disclosure which teaches that a composite particle containing a metal (e.g copper) "core" coated with a copper pyrithione "shell" results upon aqueous mixing a copper compound and a pyrithione salt (e.g. sodium pyrithione as found in both the reference and specification example) followed by the precipitation protocol. E.g. see present specification page

Art Unit: 1639

IN this regard, it is noted that where the claimed and prior art products are identical or substantially identical in structure or composition (as in the present case) AND/OR is produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the appellant and the prior art are the same, the appellant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). For a chemical composition and its properties are inseparable. Therefore, since the prior art teaches the identical or substantially identical chemical structure, the properties appellant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); and MPEP 2112.01. The PTO lacks the facilities for making comparisons between prior art and claimed compositions.

10. Claims 2, 4 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosseini et al. '860 alone or in view of the specification (e.g. page 7, figures (e.g. fig. 2) and examples (e.g. example 1) to demonstrate inherency and Gavin et al. US Pat. 5,342,437 (8/94).

The substance of the 102/103 rejection of claims 2, 4 and 6-10 over Hosseini et al. alone or in view of the specification is herein incorporated by reference in its entirety.

The Hosseini et al. particles differ from composition of claim 10 (in part) and claim 11 by failing to teach utilizing a "fatty acid coating" (e.g. stearic, linoleic, oleic etc.).

In this regard, Hosseini et al. Reference (e.g. see col. 1) teaches that pyrrithione salts in the form of crystals (e.g. platelets) are incorporated into manufacturing articles

Art Unit: 1639

including paints (e.g. coating compositions); with the *problem of "gellation"* during the production of copper pyrithione solution or dispersion occurring. The Hosseini solution to the gellation problem is to "surfactant coat" its copper pyrithione particles.

However Gavin et al. teach that incorporating fatty acids(e.g. stearic, linoleic, oleic etc.) into its pyrithione compositions (e.g. zinc pyrithione/cuprous oxide) prior to incorporation into manufacturing articles (e.g. coating compositions such as paints) solves the gellation problem.

Accordingly, one of ordinary skill in the art at the time of applicant's invention would be motivated to apply a "fatty acid" particle coat, in addition or, *in lieu* of the "surfactant coat" in order to address the gellation problem.

Thus, it would have been prima facie obvious to one of ordinary skill in the art at the time of applicant's invention to modify the Hosseini et al. Reference particle to apply a "fatty acid" coat in light of the Gavin reference teaching that to do so would address the gellation problem recognized by both the Hosseini and Gavin references.

Claims 2, 4, 6-10 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosseini et al. '860 alone or in view of the specification (e.g. page 7, figures (e.g. fig. 2) and examples (e.g. example 1) to demonstrate inherency and Kappock et al. US Pat. 5,518,774 (5/96).

The substance of the 102/103 rejection of claims 2, 4 and 6-10 over Hosseini et al. alone or in view of the specification is herein incorporated by reference in its entirety.

The Hosseini et al. spherical particles differ from the presently claimed invention by failing to explicitly teach:

- a. selection of "copper oxide" as the metal ion containing compound for use with the pyrithione salt to form copper pyrithione (claim 35); and
- b. Copper oxide/copper pyrithione ratio of 5:1 to 15:1 or 10:1 with a "diameter of the coating material" about 1% of the "idealized spherical particle". (claims 36 and 37).

Kappock et al. teach that "transchelation" of a soluble pyrithione salt (such as sodium pyrithione) with a metal ion-containing compound to form insoluble pyrithione salts afford an excellent combination "in can" and "dry film" antimicrobial protection to an aqueous coating (e.g. paint) composition. (E.g. see col. 2, lines 30-40). Preferred metals include copper in the form of "copper oxide" or "copper sulfate" with a copper oxide/copper pyrithione ratio of "between about 1:10 and about 10:1"; in which the amount of metal ion compound can vary (e.g. .001% or lower to 10% or greater, preferably between 0.005% and 1%) and include optimization so as to enable complete conversion of the pyrithione salt by transchelation to metal pyrithione during storage of the coating composition. See Kappock et al. Col. 2-3, especially col. 3, lines 12-32; patent claims 4-8.

Accordingly, the Kappock reference would provide motivation to one of ordinary skill in the art to modify the Hosseini copper pyrithione solid particle (e.g. for use in a coating composition such as paint) by substituting copper oxide for the Hosseini copper salt (e.g. copper sulfate: col. 2, lines 58-66) since:

Art Unit: 1639

a. The references' teaching of functional equivalency of copper oxide and copper sulfate since both references teach copper sulfate but Kappock further utilized copper oxide; and

b. In view of the benefits taught by the Kappock reference of utilizing copper oxide e.g. excellent combination "in can" and "dry film" antimicrobial protection to an aqueous coating (e.g. paint) composition.

Similarly, the Kappock reference provides one of ordinary skill in the art with copper oxide/copper pyrithione ratios (e.g. about 10:1) with additional motivation to optimize (e.g. enable complete conversion of the pyrithionie salt to metal pyrithione) to achieve amounts within the scope of the presently claimed invention of 5:1 to 15:1 or 10:1 with a "diameter of the coating material" about 1% of the "idealized spherical particle".

Thus it would have been prima facie obvious to one of ordinary skill in the art to modify the Hosseini et al. spherical particles by

a. selecting "copper oxide" as the metal ion containing compound for use with the pyrithione salt to form copper pyrithione (claim 35); and

b. utilize copper oxide/copper pyrithione ratio of 5:1 to 15:1 or 10:1

within the scope of the presently claimed invention (e.g. claims 35-37).

Regarding the claimed limitation "diameter of the coating material" about 1% of the "idealized spherical particle" (claims 36 and 37) it is noted that:

a. Modification of the Hosseini et al. reference in view of the Kappock reference teaching would result in the "spherical particles" which contain the same components in

Art Unit: 1639

the same amounts as the presently claimed invention which are made in an analogous manner.

In this regard, it is noted that where the claimed and prior art products are identical or substantially identical in structure or composition (as in the present case) AND/OR is produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the appellant and the prior art are the same, the appellant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). For a chemical composition and its properties are inseparable. Therefore, since the prior art teaches the identical or substantially identical chemical structure, the properties appellant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); and MPEP 2112.01. The PTO lacks the facilities for making comparisons between prior art and claimed compositions.

Alternatively, controlling reaction parameters in order to obtain "optimum spherical particles" (e.g. about 1% of the "idealized spherical particle"; whatever constitutes an "idealized spherical particle which is not specification or art defined) diameter would be within the skill of the art and obvious to one of ordinary skill in the art.

Relevant Prior Art Of Record

1. Mohseni et al. US Pat. No. 6,465,015 (10/02: filed 2/98) teaches pyrrithione acid or a water soluble salt of pyrrithione may be used in making pyrrithione salt particles. See bottom of col. 6-top of col. 7.

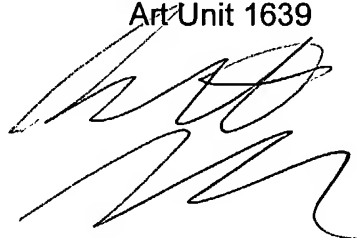
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bennett Celsa whose telephone number is 571-272-0807. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on 571-273-0811. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bennett Celsa
Primary Examiner
Art Unit 1639



BC
July 23, 2004